

CLAIMS

1. Rotational speed sensor (10) comprising a rotatable ring (11), e.g. connectable to a bearing, having K magnetic pole pairs (12) distributed angularly over the rotatable ring (11), K being an integer greater than one, and sensor means positioned relative to the rotatable ring such that a varying magnetic field is detected by the sensor means, characterised in that the sensor means comprise at least a first pair of magnetic sensors (15, 16), the first pair of magnetic sensors (15, 16) being positioned $2\pi L/K$ radians apart from each other, L being an integer between 1 and K-1.

2. Rotational speed sensor according to claim 1, in which L is equal to K/2.

3. Rotational speed sensor according to claim 1 or 2, in which the sensor means comprise at least one second pair of magnetic sensors (17, 18), the second pair of sensors (17, 18) being positioned $2\pi M/K$ radians apart from each other, M being an integer between 1 and K-1, the first pair of sensors (15, 16) and second pair of sensors (17, 18) being positioned at a relative position of $(2\pi/K)*((2n-1)/2)$ radians, n being an integer greater than one.

4. Rotational speed sensor according to claim 1, 2 or 3, in which the sensor means further comprise an additional magnetic sensor (19), positioned at $(2\pi/K)*((2m-1)/4)$ radians from the first or second pair of magnetic sensors (15-18), m being an integer greater than one.

5. Rotational speed sensor according to one of the claims 1 through 4, in which each of the magnetic sensors (15-19) is a Hall type sensor.

6. Rotational speed sensor according to one of the claims 1 through 5, in which the rotational speed sensor (10) is connectable to signal processing means (20), the signal processing means (20) being arranged to add the signals from the magnetic sensors of the first pair (15, 16) to obtain a first sensor pair signal.

7. Rotational speed sensor according to one of the claims 2 through 5, in which the rotational speed sensor (10) is connectable to signal processing means (20-22), the signal processing means (20-22) being arranged to add the signals from the magnetic sensors of the first pair (15, 16) to obtain a first sensor pair signal and to add the signals
5 from the magnetic sensors of the second pair (17, 18) to obtain a second sensor pair signal and to subsequently subtract the second pair signal from the first pair signal.

8. Rotational speed sensor according to claim 4 or 5, in which the rotational speed sensor (10) is connectable to signal processing means (20-23), the signal processing
10 means (20-23) being arranged to add the signals from the magnetic sensors of the first pair (15, 16) and/or the second pair (17, 18) to obtain a first sensor pair signal and/or a second sensor pair signal, respectively, and in which the signal processing means (20-23) are arranged for determining a speed direction from the first sensor pair signal and/or the second pair signal and the signal from the additional magnetic sensor (19).

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9. Rotational speed sensor according to one of the claims 6, 7, or 8, in which the sensor means (15-19) and signal processing means (20-23) are integrated.
